MONTHLY NOTICES

OF THE

ROYAL ASTRONOMICAL SOCIETY.

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G. B. AIRY, Esq., President, in the Chair.

Charles George Talmage, Esq.;
was balloted for and duly elected a Fellow of the Society.

Some Remarks on the Telescopic Appearance of the Exterior Envelope of the Sun, and of its Spots. By the Rev. W. R. Dawes.

The recent increase in the number of powerful telescopes armed with the means of observing the Sun without danger to the eye or to the dark glasses, has caused a corresponding increase in the number of observers of solar phenomena. These, when carefully scrutinised with large apertures and high powers under suitable atmospheric circumstances, are so wonderfully different in their appearance from those presented by the diminished apertures formerly and necessarily in use, that it would not be very surprising if some observers, unaware of what had previously been seen and described, should imagine that the phenomena revealed by their newly acquired and powerful telescopes were really *new discoveries.* And this is what, there is good reason to believe, has in some instances actually occurred. Such a mistake may also be more likely to be made when a *new name* has been applied by some recent

observer to an appearance long familiar to others, though previously unnamed. A name, no doubt, has the advantage of affording a convenient handle whereby to grasp the thing described; but, unless it is very correct and appropriate, it conveys an erroneous impression of the appearance to which it is applied, and may become far more injurious than advantageous. It seems to me, therefore, to be desirable to direct attention to what has been long ago observed and described; and also to put on record some results of a pretty constant scrutiny of solar phenomena with powerful and excellent telescopes during the last twelve or fifteen years.

The mottled appearance of the solar surface requires no very large amount of optical power to render it visible. I have often observed it with a good refractor of only $2\frac{1}{2}$ inches aperture and a power of 60. Examined with a large aperture, such as 6 or 8 inches, it becomes evident that the surface is principally made up of luminous masses imperfectly separated from each other by rows of minute dark dots,—the intervals between these dots being extremely small, and occupied by a substance decidedly less luminous than the general surface. This gives the impression of a division between the luminous masses, especially with a comparatively low power, which, however, when best seen with high powers, is found to be never complete. The masses thus incompletely separated are of almost every variety of irregular form;—the rarest of all, perhaps, being that which is conveyed to my mind by Mr. Nasmyth's appellation of "*willow-leaves;*" viz. *long*, *narrow*, and *pointed*. Indeed, the only situation in which I have usually noticed them to assume anything like such a shape, is in the immediate vicinity of considerable spots, on their *penumbræ*, and frequently projecting beyond it irregularly for a small distance on to the *umbra;*—an appearance with respect to which, in my "*Description of a new Solar Eye-piece*," which I read before the Society in April 1852 (see *Memoirs*, vol. xxi. p. 161), I employed the following expressions:—"The interior edge of the penumbra frequently appears extremely jagged; the bright ridges on its surface, which are directed nearly towards the centre of the spot, being seen projected to irregular distances on to the cloudy stratum [or *umbra*], and looking much like a piece of coarse thatching with straw, the edge of which has been left untrimmed." After nearly twelve years of careful observations of the same phenomena, I do not think that I could improve upon this description.

Of the general appearance of the Sun's surface, I have met with no more accurate description than is contained in Sir John Herschel's "*Outlines of Astronomy*," Art. 387, where he says, "The part of the Sun's disk not occupied by spots is far from uniformly bright. Its ground is finely mottled with an appearance of minute dark dots or *pores*, which, when atten-

tively watched, are found to be in a constant state of change. There is nothing which represents so faithfully this appearance as the slow subsidence of some flocculent chemical precipitates in a transparent fluid, when viewed perpendicularly from above." The only part of this admirable description which I should be at all disposed to modify is that relating to the "constant state of change" in the *pores*. The plan I have uniformly adopted in the minute scrutiny of the solar surface has been, to employ very small perforations in the diaphragm-plate of my solar eye-piece (viz. from 20″ to 60″ in diameter), using the highest magnifiers which circumstances would permit. In this way I have frequently kept the same luminous masses and the intervening pores in view for an hour or two together; and have rarely observed any decided change in either, even when well seen with powers from 400 to above 600. Yet very slight atmospheric tremours suffice to give an appearance of almost perpetual variation; and unless the view is confined within the narrow limits of a very small field, the eye is apt to become confused in its judgment of the relative positions of objects so minute and delicate.

A striking exception, however, to this comparative quietude is found in the immediate vicinity of spots which are either rapidly enlarging or closing. It is under these circumstances especially that the luminous masses are found to become more elongated. This is also more remarkably the case when they are *preparing for a rush across a chasm*, and thus forming those luminous bridges which so often intersect considerable spots. The point from which such a rush is about to be made is often indicated by a greater crowding together towards that place, and a general inclination of the longer axis of each of the elongated masses in that direction; which might, I imagine, be well exemplified by such chemical precipitates as Sir John Herschel alludes to, if they were about to flow through a narrow spout or opening in the vessel containing them. I have had my attention thus specially directed to such a point at the edge of a spot; and, having placed it in a very small field of view, have watched with great interest the formation of the first portion of the bridge. In this process, the luminous masses have the appearance of bits of straw, all lying nearly in the same direction, though sometimes rather obliquely to the line of the bridge: the sides of the bridge having a jagged appearance arising from the unequal length of the pieces which compose it. It is a remarkable fact that these bridges are always formed by the bright streaks of the outer stratum, such as are seen projected on the penumbra, without any admixture of the less luminous second or penumbral stratum. Such, at least, is the conclusion I have arrived at after frequent and very careful scrutiny. And so intense is the light of such a line, however narrow, that, when projected on to the umbra of a large spot, its superior brightness usually prevents the

cloudy stratum from being discerned at all, even when the umbral portion only is included in the small field of view.

With respect to the highly interesting subject of the origin or cause of the solar spots, I wish to direct special attention to the *black nucleus* which in most of the large and symmetrical spots is found to occupy some part of the *umbra*. I cannot but regret that, though nearly twelve years have elapsed since I announced the frequent existence of such a black spot, and that it would be highly desirable to restrict to it the term *nucleus*, yet I believe the distinction has never been made by any other observer; the *umbra* having been universally, so far as I know, designated as the *nucleus*, and the existence of the true black nucleus within it either forgotten or ignored. My earnest desire that the distinction should be recognised and established does not arise merely from the conviction that accuracy is preferable to inaccuracy, and that where a decided difference really exists it is desirable to express it by a difference of terms; though I should imagine that such a ground would generally be deemed sufficient of itself. A still more cogent reason is found in the fact, that the whole series of my observations for twelve years past has led me to the conclusion that generally, if not universally, the existence or absence of the black nucleus is sufficient to determine, or at least to throw much light upon, the *origin* of the spot; and that the origin of those in which the nucleus exists is widely different from the origin of those from which it is absent. To do justice, however, to this view of the subject would unduly lengthen the present paper; and I, therefore, hope to be able, in a future communication, more fully to lay before the Society the conclusions at which I have arrived.

Hopefield Observatory, Haddenham, Bucks,
9th Dec. 1863.

On the Motion of the Solar System of Space.

By E. J. Stone, Esq.

On 1859, March 11, the Astronomer Royal read before this Society a paper "On the Movement of the Solar System in Space;" the great novelty of his method was that no assumption was required of an approximate position of the apex of solar motion; the stars (in the second supposition upon which stress was chiefly laid) were supposed to have independent motions of their own, of any magnitude and in any direction, the only restriction introduced being that in our present ignorance the motion in one direction was as probable as that in any other

direction. Mr. Airy adopted M. W. Struve's scale of distance, estimated with respect to brightness. The method was first applied to 113 stars selected from Mr. Main's papers, on account of their having large proper motions; the result of the paper was to confirm previous investigations with respect to the direction of the supposed solar motion, but the velocity of the solar system obtained in this investigation was nearly six times as great as that obtained by M. Otto Struve, and the sums of the squares of the proper motion, corrected for the supposed solar motion, were not very greatly diminished.

The Astronomer Royal's method was next applied to all the stars contained in Mr. Main's papers on Proper Motion, amounting in all to 1167, the results were drawn up in a paper and read before this Society by Mr. Dunkin, 1863, March 13; the chief results obtained were to confirm previous investigations with respect to the direction of the supposed solar motion, and to obtain a satisfactory agreement, with respect to velocity, with M. Otto Struve's previous investigation, the sums of the squares of the corrected proper motions were however scarcely diminished at all.

The results of these papers of the Astronomer Royal must at least be allowed to have thrown some doubts upon our power of extracting numerical evidence of the existence of a motion of the solar system from our present determination of proper motions. In Mr. Main's papers on Proper Motion he has, for the stars with proper motions equal to or greater than $0^s{\cdot}02$ in R.A., and $0''{\cdot}3$ in N.P.D., computed the factors of solar motion on the supposition that the apex has for its R.A. 260°, and for its N.P.D. 55° 37′. Now this position agrees very closely with that assigned by the investigations of different astronomers, these stars are the same as those used by the Astronomer Royal in his first investigation, and the proper motions being considerable they can be roughly tested by modern observations *inter se*. I have first tested the proper motion, I found them on the whole so well borne out that, for my present purpose, I have used them intact.

The question I have proposed to myself is simply this:— Is it possible to determine the linear velocity of the solar system, so as to obtain any considerable diminution of the sums of the squares of the corrected proper motions?

The proper motions with which I am here dealing are all large; I shall take for my linear unit the mean distance of the group of stars under consideration, and suppose that on the whole the stars will be fairly distributed about this mean, or, in other words, I shall assume all the distances to be equal.

First including all the stars for which Mr. Main has calculated the solar factors—I find the sum of the squares of the proper motions in R.A. (expressed in seconds of time) to be equal to 0·525; the velocity of solar motion $=0''{\cdot}054$; the sum of the squares of the proper motions corrected for solar motion

$=0\cdot473$; the greatest possible diminution, therefore, is to the whole only in the ratio of 52 : 525, or 1 : 11.

The velocity of the solar motion is here exceedingly small, and the reason is that the given factors of solar motion are not sufficiently accurate for stars near the pole; if we reject all stars within 10° of the pole, amounting in number to 13, we obtain the following results:—

Sum of squares of uncorrected proper motions in R.A.	$= 0\cdot464$
Velocity of solar motion	$= 0''\cdot434$
Sum of squares of corrected proper motions	$= 0\cdot381$

and the diminution bears to the whole the ratio of 83 : 464, or 1 : $5\frac{1}{2}$ nearly.

Next, for the proper motions in N.P.D.,

The sum of the squares of the proper motions uncorrected	$= 48\cdot539$
Velocity of solar motion	$= 0''\cdot341$
Sum of squares of proper motions corrected	$= 44\cdot862$

and the diminution bears to the whole the ratio of 3677:48539, or 1 : 13 nearly.

The close agreement of the values of the velocity of solar motion deduced independently from the consideration of the proper motion in R.A. and N.P.D. is satisfactory; if we used the mean value $0''\cdot403$ the diminution in R.A. and N.P.D. would be very nearly as great as those given above.

It appears, therefore, that by supposing the solar system to be moving with an angular velocity $=0''\cdot403$ (the mean distance of the group of stars under consideration being taken as the unit) towards a point whose right ascension $=260°$, and N.P.D. $=55°\ 37'$, the sums of the squares of the corrected proper motions in R.A. can (for the group of stars under consideration) be diminished in the ratio of 1 : $5\frac{1}{2}$, and the sum of the squares of the proper motions in N.P.D. in the ratio of 1 : 13.

This is omitting, for convenience of computation, stars near the pole.

In Mr. Dunkin's paper a very large number of small proper motions are included: an inspection of the books of computation shows that the curves of the squares of the small proper motions (on account of the correction applied being comparatively large) are in general increased by the application of the effect of the supposed solar motion. In that paper the distribution of distance is made solely according to brightness. It appears to me that, when small and large proper motions are used together, the sum of the squares of the corrected proper motion can be decreased but very little, unless some distribution of distance is made with respect to the magnitude of proper motion.

I think we may fairly conclude that so long as we confine

our attention to large proper motions, we have numerical evidence of a drift such as would be produced by the motion of the solar system in space, but that the numerical evidence is slight. Mr. Otto Struve and the Astronomer Royal both found the evidence stronger in the case of proper motion in R.A. than in N.P.D.; and this is very strongly marked in the present paper. It may, perhaps, not be unworthy of notice, that if Bradley's R.A. required a correction of the form x cos R.A. + y sin R.A., the apparent drift would be at once accounted for: the variation of the above formula from that required on the supposition of solar motion being exceedingly small for stars of considerable N.P.D.

Greenwich, 1863, *Dec.* 11.

On the Eclipses recorded in the Ancient Chinese Historical Work called Chun Tsew. By John Williams, Esq., Assistant Secretary.

In the account of the *Chun Tsew*, a Chinese historical work written by Confucius, given by Father Gaubil, one of the French missionaries to China, in his *Traité de la Chronologie Chinoise*, he mentions that it contains an account of several eclipses of the Sun. Ideler, also, in his paper, "Ueber die Zeitrechnung der Chinesen," printed in the *Transactions of the Berlin Academy*, speaking of the *Chun Tsew*, says, "What gives great interest to this work is the account of thirty-six solar eclipses observed in China, the first of which was on the 22d February, 720 B.C., and the last 22nd July, 495 B.C." As no further account of these eclipses is given in these works, and as there might be some difficulty in readily finding the particulars of them, should they be required, I have been induced to examine the copy of the *Chun Tsew* in my possession, and to extract the accounts of these eclipses as given in the original Chinese, and which I now beg permission to lay before the Society.

The *Chun Tsew* is said to be the only work really written by Kung Foo Tze, or, as we call him, Confucius; the other treatises attributed to him having been compiled by his disciples, either during his life, or, as in the last of them, some years after his death. It treats of the history of the Le Kwo, or Confederated Nations, into which China was divided during the Chow Dynasty, viz. between 1122 and 255 B.C.

The period of this history is from 722 to 479 B.C., being an interval of about 242 years, during the latter part of which Confucius flourished. It is more particularly devoted to the history of the small state of Loo, the birth-place of Confucius, where he passed a great portion of his life, and was advanced to the highest honours the monarch could bestow. It contains

the history of twelve princes of this state, with incidental notices of the other Confederated Nations. The number of the years of each reign is accurately determined, and the events are classed under the years in which they occurred. Each year is divided into four sections, under the four seasons—spring, summer, autumn, and winter—subdivided into months, and often with the days of the month distinguished by the characters of the cycle of sixty years, also used as ordinary numbers; to which, in my copy, are added copious commentaries by eminent writers.

The name *Chun Tsew* is said to have been given to this work from its having been commenced in spring and finished in autumn. I am, however, inclined to believe that it rather refers to the before-mentioned division of the years into seasons than to the time of the beginning and ending of the writing of the work. It is written in a very concise and severe style, being confined to the bare mention of facts, without comment or observation ; and although to us, accustomed to the style of Gibbon or Macaulay, it would appear dry and uninteresting, it is much valued by the Chinese as a model of the ancient style of writing. It forms one of the *Woo King*, or Five Classical Books, without a thorough knowledge of which and of the *Sze Shoo*, or four books, no man can attain to any post of importance in the Chinese Empire.

The account of each eclipse is but little more than a brief mention of its occurrence at a certain time. As an example, I will give the particulars of the first, as recorded in the *Chun Tsew*. I must premise by observing that some of these particulars do not follow each other consecutively, as I quote them, but have to be gathered from parts of the preceding portion of the work, including the commentary. They read as follows:— "In the fifty-eighth year of the thirty-second cycle, in the fifty-first year of the Emperor King Wang, of the Chow Dynasty, the third year of Yin Kung, Prince of Loo, in the spring, the second moon, on the day called Kea Tsze, there was an eclipse of the Sun." This fifty-eighth year of the thirty-second cycle answers to 720 B.C.

Such is the general style of the announcement of these eclipses ; but, as a constant repetition of precisely similar passages, differing only in the date and monarch, would perhaps be tedious, I have formed a table, in which I have confined the particulars to merely the cycle, the year of the cycle, the season, month, and day on which the eclipse occurred ; to which I have added the years B.C., and also the months and days, according to our mode of expressing them. The years have been carefully computed, according to the method explained in my paper of June last, and verified by the Chinese Chronological Tables in the *She Ke*, or great body of historical annals in 300 vols., and also by similar tables recently published in Japan, about the year 1860. I may also state that the

present year, 1863, is the sixtieth or last year of the seventy-fifth cycle of sixty years, the first cycle commencing 2637 B.C. The days have been computed according to the method laid down by Ideler in the paper before referred to. They must, however, be considered merely as approximately correct.

No.	Cycle.	Year of Cycle.	Season.	Moon.	Denomination of Day.	Year B.C.	Month and Day.
1	XXXII.	58	Spring	2d	Kea Tsze	720	Feb. 22
2	XXXIII.	9	Autumn	7th	Jin Shin	709	July 17 (Total.)
3	,,	23	Winter	10th	1st Day of Moon.	695	Oct. 10
4	,,	42	Spring	3d	,,	676	April 15
5	,,	49	Summer	6th	Sin We	669	May 27
6	,,	50	Winter	12th	Kwei Hae	668	Nov. 10
7	,,	54	Autumn	9th	Kang Woo	664	Aug. 28
8	XXXIV.	3	Autumn	9th	Woo Shin	655	Aug. 19
9	,,	10	Spring	3d	Kang Woo	648	April 6
10	,,	13	Summer	5th	Kwei Hae	645	April 15
11	,,	32	Spring	2d	Kwei Hae	626	Feb. 3
12	,,	46	Summer	6th	Sin Chow	612	April 28
13	,,	57	Autumn	7th	Kea Tsze	601	Sept. 20 (Total.)
14	,,	59	Summer	4th	Ping Shin	599	Mar. 6
15	XXXV.	6	Summer	6th	Kwei Maou	592	June 16
16	,,	23	Summer	6th	Ping Yin	575	May 9
17	,,	24	Winter	12th	Ting Sze	574	Oct. 22
18	,,	39	Spring	2d	Yih We	559	Jan. 14
19	,,	40	Autumn	8th	Ting Sze	558	May 31
20	,,	45	Winter	10th	Ping Shin	553	Aug. 31
21	,,	46	Autumn	9th	Kang Seuh	552	Aug. 20
22	,,	46	Winter	10th	Kang Shin	552	Sept. 19
23	,,	48	Spring	2d	Kwei Yew	550	Jan. 5
24	,,	49	Autumn	7th	Kea Tsze	549	June 19
25	,,	49	Autumn	8th	Kwei Sze	549	July 18
26	,,	52	Winter	12th	Yih Hae	546	Oct. 13
27	XXXVI.	3	Summer	4th	Kea Shin	535	Mar. 18
28	,,	11	Summer	6th	Ting Sze	527	April 18
29	,,	13	Summer	6th	Kea Seuh	525	Aug. 21
30	,,	17	Autumn	7th	Jin Woo	521	June 10
31	,,	18	Winter	12th	Kwei Yew	520	Nov. 23
32	,,	20	Summer	5th	Yih We	518	April 9
33	,,	27	Winter	12th	Sin Hae	511	Nov. 14
34	,,	33	Spring	3d	Sin Hae	505	Feb. 16
35	,,	40	Winter	11th	Ping Yin	498	Sept. 22
36	,,	43	Autumn	8th	Kang Shin	495	July 22

The place where these eclipses were observed was possibly somewhere in the state of Loo. This state occupied a portion of the present province of Keang Nan, in the east of China, and was situated between the great rivers Yang Tze Keang and Hwang Ho. It extended along the banks of the latter river to its mouth, and was between the 32d and 34th degrees of north latitude, and from 115 to 120 east longitude.

I have but little to add to this account, save that two of these eclipses (viz. those of 709 and 601, Nos. 2 and 13) are recorded as having been total. The Eclipses of 542 and 549, Nos. 22 and 25 of the list, are stated to have occurred the month after the eclipse immediately preceding them.

In conclusion, I have to remark that I have merely given the data for these eclipses as they occur in the *Chun Tsew*, leaving it to those who are accustomed to this kind of work, and who may feel an interest in it, to ascertain the correctness of the recorded observations, and thus to test the general accuracy of early Chinese history.

Results of the Meridional Observations of Small Planets; Occultation of Stars by the Moon; and Phenomena of Jupiter's Satellites; made at the Royal Observatory, Greenwich, from June to October, 1863.

(*Communicated by the Astronomer Royal.*)

Angelina (64).

Mean Solar Time of Observation.		R.A. from Observation.	N.P.D. from Observation.
	h m s	h m s	° ′ ″
1863, Sept. 22	11 55 22·1	0 0 43·86	88 13 14·87
29	11 21 59·8	23 54 51·96	88 49 32·32

Cybele (66).

Mean Solar Time of Observation.		R.A. from Observation.	N.P.D. from Observation.
	h m s	h m s	° ′ ″
1863, Sept. 11	11 51 47·9	23 13 47·02	95 46 34·72
16	11 28 49·8	23 10 27·96	96 11 49·81

All the observations of N.P.D. have been corrected for refraction and parallax.

Occultation of Stars by the Moon.

Day of Obs.	Phenomenon.	Moon's Limb.	Mean Solar Time. h m s	Observer.
1863, July 28	ξ^1 Sagittarii, disapp.	Dark	8 59 59·1	C.
28	ξ^1 Sagittarii, reapp. (*a*)	Bright	10 7 20·1	C.
Oct. 23	16 Piscium, disapp.	Dark	9 49 31·4	J. C.
30	χ^1 Orionis, disapp. (*b*)	Bright	9 43 36·0	D.
30	χ^1 Orionis, reapp.	Dark	10 47 14·4	D.

(*a*), The star faint; sensibly separated from Moon's limb when first seen. (*b*), The star very faint when near the Moon's limb.

The initials D., C., and J. C. are those of Mr. Dunkin, Mr. Criswick, and Mr. Carpenter.

Phenomena of Jupiter's Satellites.

Day of Observation. 1863.	Satellite.	Phenomenon.	Mean Solar Time. h m s	Observer.
June 2	III.	Ingress, bisection	10 35 42·8	E.
4	II.	Occ. disapp. first cont.	9 33 28·1	C.
4	II.	,, last cont.	9 36 57·5	C.
29	II.	Occ. reapp. bisection	8 54 15·1	J. C.
29	I.	Ecl. reapp. (*a*)	9 46 46·5	J. C.

(*a*), The sky rather hazy; the image of the planet not good.

The initials E., C., and J. C., are those of Mr. Ellis, Mr. Criswick, and Mr. Carpenter.

New Elements of Leto (68). By Dr. Luther.

Epoch, 1863, Nov. 16^h·0, Berlin M.T.

$$M = 86^\circ\ 41'\ 51''.6$$

$$\left.\begin{aligned} \pi &= 345\ 10\ 5\cdot0 \\ \Omega &= 44\ 53\ 14\cdot3 \end{aligned}\right\} \text{Equinox, 1863, Nov. 16.}$$

$$i = 7\ 57\ 9\cdot2$$

$$\varphi = 10\ 48\ 20\cdot6$$

$$\mu = 764''.5970$$

$$\log a = 0\cdot4443823$$

Elements of Comet V., 1863. By H. Romberg.

(*Communicated by J. G. Barclay, Esq.*)

Another comet was discovered by M. Tempel at Marseilles on Nov. 5th. It was visible to the naked eye, shining as bright as a star of the 5th mag. It appears as a condensated nebula, showing a tail about 2° long. The Comet has passed its perihelion, and is now removing from Sun and Earth, and will therefore become fainter. I calculated the following elements and Ephemeris, the latter of which will be useful for finding it.* It will probably be observed during a long time, but only in the morning hours.

$$T = 1863, \text{Nov. } 9{\cdot}49923 \text{ Greenwich M.T.}$$
$$\left.\begin{aligned} \pi &= 94\ 46\ 10{\cdot}6 \\ \Omega &= 97\ 31\ 15{\cdot}2 \end{aligned}\right\} \text{Apparent Equinox, Nov. } 13{\cdot}5$$
$$i = 78\ 6\ 46{\cdot}5$$
$$\log q = 9{\cdot}849148$$

Motion direct.

The error of the mean place is

$$C - O.$$
$$\Delta\lambda = +11''{\cdot}3 \qquad \Delta\beta = -1''{\cdot}6$$

Mr. J. G. Barclay's Observatory, Leyton, N.E.,
Nov. 22, 1863.

Comets IV. and V., 1863. By H. Romberg.

(*Communicated by J. G. Barclay, Esq.*)

The Comet IV. was observed here as follows —

1863.	G.M.T. h m s	Comet's R.A. h m s	Log. $p\,\Delta''$.	Comet's Decl. ° ′ ″	Log. $p\,\Delta''$.	
Dec. 2	8 12 39	14 48 39·75	0·556	+46 11 22·2	0·904	*a*
6	6 50 45	15 20 54·21	0·781	+45 28 25·1	0·844	*b*
„	8 30 19	15 21 27·81	0·543	+45 27 6·9	0·905	*b*

The mean places of the stars of comparison are, according to Argelander,

		h m s	° ′ ″
1863·0	*a*	14 48 57·44	+46 13 49·1
	b	15 13 58·33	+45 30 59·2

This comet appears as an oblong nebula, strongly condensed in the middle. Its diameter is about 1′, and it shines now as

* The Ephemeris, extending from Nov. 26 to Dec. 26, 1863, is not printed.— Ed.

a star of the 8th mag. The Ephemeris I gave for this comet is now out very much, but I have not yet been able to get here three observations for a basis of a new calculation.

Of the Comet V. I caught only a hurried place on Dec. 3,

		Comet's R.A.	Comet's Decl.
	h m s	h m s	° ′ ″
1863, Dec. 3	6 16 17	15 46 35·8	+30 16 17

which agrees well with my Ephemeris. The comet appeared round, about 2′ in diameter. Its well-defined nucleus was as bright as a star of mag. 7. The tail appeared very faint, through clouds. This comet sets now about $7^h\,51^m$ G.M.T., and may be well observed on evenings. Both comets will probably be observed during a long time. They seem not to have been observed before.

Mr. J. G. Barclay's Observatory, Leyton, N.E.
Dec. 9, 1863.

RECENT PUBLICATIONS.

Untersuchungen über die in der Nähe von Moskau stattfindende Local-Attraction, von G. Schweizer (Moskau, 1863, pp. 1–164), contains in detail the observations, and theoretical investigations grounded on them for determining the seat of the deficiency of mass in relation to the remarkable disturbance of the direction of gravity in the neighbourhood of Moscow; an account of which, as given verbally by M. Otto Struve at the meeting of the Society in April 1863, has already appeared in the *Monthly Notices*, No. 6, p. 185.

Jahresbericht am 14 Juni, 1863, dem Comité der Nicolai-Hauptsternwarte abgestattet vom Director der Sternwarte (aus dem Russischen übersetzt). Anhang I. Statuten der Nicolai-Hauptsternwarte. Abhang II. Verordnungen des Ministers. St. Petersburg, 1863. 8vo, pp. 1–48.

A more full account might properly be given of this Report by M. Otto Struve, presented in pursuance of the new statutes of the "Nicholas Head-Observatory" at Pulkova, and relating to the fifteen months which have elapsed since his definitive appointment as Director; but M. Struve, at the commencement of it, holds out the hope of giving, on the approaching solemnization of the twenty-fifth anniversary of the foundation,

a survey of the work of the Observatory during the quarter century of its existence. The Report is, as the Director remarks, drawn up on the model of those of the Greenwich Observatory. In the course of it the following list is given of Astronomical Memoirs recently published in the Memoirs of the Academy of St. Petersburg :—

1. O. Struve, Observations de la Nébuleuse d'Orion.
2. O. Struve, Observations faites à l'époque où le plan des anneaux de Saturne passait par le soleil.
3. Winnecke, Considérations concernant les observations méridiennes à faire pendant l'opposition prochaine de Mars, dans le but de déterminer sa parallaxe.
4. Oom, Vergleichung des Armagh-Catalogs von Robinson mit dem Aboer von Argelander.
5. Weisse, Positiones mediæ stellarum fixarum in zonis Regiomontanis observatarum. Pars secunda. Edi curavit et præfatus est O. Struve.
6. Winnecke, Beobachtungen des Mars zur Zeit der Opposition 1862 ;

besides a Memoir in Russ by the adjunct-astronomer Smysloff, intended to appear as a separate work, and two Memoirs in the same language in the Proceedings of the Topographic Department ; and also a Memoir by Herr Gylden "Berechnung der Bahn des Cometen 1860. II.," ordered to be printed.

Ueber die Parallaxe des Sterns LL. 21258. Von A. Krüger. *Ueber die Parallaxe des Sterns Oeltzen N*: 0, 17415,6. *von demselben. Aus den Abhandlungen der Finnischen Societät der Wissenschaften.* Helsingfors, 1863.

The results deduced from the observations recorded in these two memoirs by M. Krüger are as follows :—

Annual Parallax of LL. 21258 in relation to the two comparison stars is $= 0''{\cdot}260 \pm 0''{\cdot}020$.

Annual Parallax of Oeltzen, N : 0, 17415,6 in relation to the two comparison stars is $= 0''{\cdot}247 \pm 0''{\cdot}0211$.

William Herschel's Verzeichnisse von Nebelflecken und Sternhaufen, bearbeitet von Arthur Auwers ; Königsberg, 1862, fo. pp. 1–77, (forms part xxxiv. of the *Königsberg Observations.*)

The work is a reproduction of the three Catalogues of Nebulæ and Star-clusters given by Sir W. Herschel in the

Philosophical Transactions for the years 1786, 1789, and 1802, and which contain the descriptions of about 2500 of these objects, together with their distances from neighbouring stars, arranged in the order of discovery or determination of the positions. The absolute positions have been previously calculated by Bode and Caroline Herschel, and more recently as to two of the eight classes by D'Arrest, but a new and complete reduction of the observations appeared very desirable, and M. Auwers has now availed himself of the opportunity given to him by Prof. Luther for the publication in the *Königsberg Memoirs* of the results calculated by him originally for his own use, about seven years ago.

The objects are referred to by their class and number, as in the original Catalogues, but they are now arranged in the order of their Right Ascensions, Sir W. Herschel's descriptions being given in English in the words and with the symbols originally made use of. The calculated positions are compared with those obtained by Sir J. Herschel in his Slough observations, and there are also references to these observations, and to the Catalogues of Lacaille, Messier, D'Arrest, and Laugier. There is also a reduction of the Catalogues of Messier and Lacaille, and of the positions of some subsequently discovered Nebulæ.

Instrument for Sale.

A first-rate Equatoreal Refractor, by Alvan Clark. The object-glass has a clear aperture of $8\frac{1}{4}$ inches, and a focal length of $109\frac{3}{4}$ inches. The driving clock can be regulated to the greatest nicety by its pendulum vibrating half seconds; and has often kept a wire on a star for an hour together. The telescope can be kept upon any object whose declination does not exceed 45° North, throughout its whole course, without turning over the telescope to the other side of the polar axis. For further particulars, address Rev. W. R. Dawes, Hopefield Observatory, Haddenham, Thame.

Instrument for Sale.

A Transit by Troughton and Simms, on the same construction as that of Greenwich, 8-feet focal length and 5·3-inches aperture. It has all the usual appendages, and is in excellent order. For further information, reference may be made to A. Graham, Esq., Markree Observatory, Colooney.

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